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TITLE: Thermally responsive polymer monoliths

DATE-ISSUED: July 27, 1999

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PARENT-CASE:

This application claims benefit of Provisional Appl. No. 60/039,221 filed Feb. 28, 1997.

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Brief Summary Text - BSTX:

U.S. Pat. Nos. 5,334,310 and 5,453,185 disclose a process for preparing a continuous liquid chromatography column and a column containing a new class of macroporous polymer materials prepared by a simple molding process. The porous polymer **monoliths** are characterized by a unique bimodal pore distribution, consisting of large generally micrometer-sized **convective** pores and much smaller diffusive pores. High flow rates through the **monoliths** are obtained at low back pressures due to the network of the large canal-like **convective** pores which traverse the length of the **monolith**. It has now been discovered that unique flow-through properties can be imparted to these and other porous polymer materials by grafting the pores with thermally responsive polymer

chains.

Detailed Description Text - DETX:

A polymer **monolith** is a solid polymer body containing a sufficient amount of pores greater than about 600 nm in diameter that a liquid can pass through the body under conditions of **convective** flow. The **monolith** is distinguished from a packed bed of polymer beads in which **convective** flow through the bed occurs predominately, if not exclusively, through the interstices between beads and not through any single bead. The **monolith** has a thickness of about 5 mm or more, as contrasted with thin membranes which have thicknesses on the order of several microns. Preferably, the **monolith** is an elongated generally rod-shaped body having a thickness (or length) of from about 5 to about 100 mm.

Detailed Description Text - DETX:

Preferred **monoliths** are the plugs disclosed in U.S. Pat. Nos. 5,334,310 and 5,453,185, the subject matters of which are incorporated herein by reference. These preferred polymer **monoliths** are characterized by possessing a bimodal pore distribution, containing both large generally micrometer-sized **convective** pores and much smaller diffusive pores. As a result of the large canal-like **convective** pores which traverse the length of these **monoliths**, a high flow rate through the **monoliths** may be obtained at low back pressure.